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Second report on shared natural resources: transboundary groundwaters

by Mr. Chusei Yamada, Special Rapporteur

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I. Introduction

1. At the fifty-fifth session of the International Law Commission, in 2003, the Special Rapporteur presented his first report (A/CN.4/533 and Add.1) on the topic of shared natural resources. The report sought to provide the background of the topic. The Special Rapporteur, while envisaging covering groundwaters, oil and natural gas under the topic, proposed to begin with confined transboundary groundwaters, which had not been covered by the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses (hereinafter referred to as "the 1997 Convention").[1] He emphasized the vital importance of groundwaters for mankind, their distinct differences from surface waters and the need to acquire sufficient knowledge of those groundwaters. A technical briefing for members of the Commission by experts on the addendum to the report was arranged by the United Nations Educational, Scientific and Cultural Organization (UNESCO).[2]

2. The members of the Commission commented on the various aspects of the report and gave general support to the Special Rapporteur's approach to focus on groundwaters for the time being.[3] Some serious doubt was expressed on the concept of "shared" in relation to transboundary groundwaters.

3. The discussions in the Sixth Committee of the General Assembly of the United Nations in 2003 indicated general support by the delegations for the Special Rapporteur's approach in his first report.[4] In most of their comments and responses, Governments encouraged the Commission to proceed with the project. However, some delegations voiced apprehension that the term "shared resources" might refer to a shared heritage of mankind or to notions of shared ownership.

4. In view of the sensitivity expressed both in the Commission and in the Sixth Committee on the term "shared" in the title of the topic, the Special Rapporteur intends to focus on the sub-topic of "transboundary groundwaters" in the present report during the time that the Commission deals exclusively with groundwaters.

5. The Special Rapporteur fully recognizes that further efforts for data collection, research and study on groundwaters are required before any definitive proposal can be formulated. Such efforts must be strenuously pursued. However, he has decided to present several draft articles in this report. He feels that the members of the Commission, who are lawyers, might find it easier to react concretely if they are presented with proposals in the form of draft articles. This is meant to provoke substantive discussions, to identify the areas to be addressed and to promote better understanding of the problems of groundwaters. He is by no means suggesting any premature formulation of draft articles. He bears in mind that the mandate of the Commission is codification and that any draft article must be substantiated by the existing international regulations, customary rules and practices of States.

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[1] General Assembly resolution 51/229, annex.

[2] The briefing was conducted at an informal meeting of the Commission by a group of experts from UNESCO, the Food and Agriculture Organization of the United Nations (FAO) and the International Association of Hydrogeologists (IAH).

[3] See A/CN.4/SR.2778 and SR.2779.

[4] See A/CN.4/537, paras. 201-217.

6. In preparing for the second report, the Special Rapporteur has continued to receive valuable assistance from experts under the auspices of UNESCO.[5] The addenda to this report, which will provide hydrogeological and other technical background, including a review of existing relevant treaties, a world groundwater map and case studies, will be based on the inputs from those experts. He is also supported by expert members of the Study Group on Shared Natural Resources established by the Ministry of Foreign Affairs of Japan.[6] The Special Rapporteur wishes to record his most sincere appreciation for their significant contributions.

II. General framework

7. There is no doubt that the most relevant existing general treaty is the 1997 Convention. In his first report, the Special Rapporteur, recalling the Commission's resolution in 1994 recommending mutatis mutandis application of the principles of international watercourses to groundwaters, stated that "it is obvious that almost all the principles embodied in the Convention ... are also applicable to confined transboundary groundwaters".[7] This statement met with some criticism, both in the Commission and in the Sixth Committee. It was also carefully reconsidered at the UNESCO/FAO/IAH Expert Group Meeting in Paris. Some of those principles could not be transposed automatically to the management of fundamentally non-renewable and finite resources, such as transboundary groundwaters and non-renewable groundwaters. This was, for example, the case of article 5 of the 1997 Convention, which dealt with the principle of equitable and reasonable utilization. In other cases, the provisions of the Convention were too weak or required modification, given the vulnerability of groundwaters to pollution.[8] The Special Rapporteur accepts these criticisms and recognizes the need to adjust those principles. However, he still feels that the 1997 Convention offers the basis upon which to build a regime for groundwaters.

8. It is therefore proposed to consider draft articles within the following general framework, which more or less reflects that of the 1997 Convention.

Part I. Introduction

Scope of the Convention

Use of terms (definition)

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[5] UNESCO organized an Expert Group Meeting on Shared Groundwater Resources for the Special Rapporteur in Paris on 2 and 3 October 2003, with the contribution of FAO and IAH. Alice Aureli of UNESCO also arranged to send Shammy Puri of IAH, Gabriel Eckstein of Texas Tech University and Kerstin Mechlem of FAO to Tokyo to advise the Special Rapporteur from 8 to 11 December 2003.

[6] The members of the Study Group are Naoko Saiki, Yasuyoshi Komizo and Miwa Yasuda of the Ministry of Foreign Affairs, Kazuhiro Nakatani and Hum Tsuruta of the University of Tokyo, Mariko Kawano of Waseda University, Hiroyuki Banzai of Surugadai University and Naoki Iwatsuki of Rikkyo University. The Group is also assisted by Makoto Minagawa of the Graduate School of Waseda University.

[7] A/CN.4/533, para. 20.

[8] Statements of Messrs. Economides, Niehaus and Opertti Badan (A/CN.4/SR.2779) and of the delegations of Brazil, India and Norway (A/C.6/58/SR.20 and 21).

Part II. General principles

Principles governing uses of transboundary groundwaters

Obligation not to cause harm

General obligation to cooperate

Regular exchange of data and information

Relationship between different kinds of uses

Part III. Activities affecting other States

Impact assessment

Exchange of information

Consultation and negotiation

Part IV. Protection, preservation and management

Monitoring

Prevention (Precautionary principle)

Part V. Miscellaneous provisions

Part VI. Settlement of disputes

Part VII. Final clauses

9. This framework is still preliminary and would be subject to substantial modifications. It is also noted that the draft articles on prevention of transboundary harm from hazardous activities, which were adopted by the Commission at its fifty-third session, in 2001,[9] provide a useful guide to this exercise. In this second report, the Special Rapporteur presents several draft articles for parts I and II. For the benefit of the readers, the compilation of the proposed draft articles is given in annex I to the present report.

III. Scope of the Convention

10. The proposed draft article reads as follows:

Article 1
Scope of the present Convention

The present Convention applies to uses of transboundary aquifer systems and other activities which have or are likely to have an impact on those systems and to measures of protection, preservation and management of those systems.

11. In his first report, the Special Rapporteur suggested using the term "confined transboundary groundwaters" to denote the body of water that was not covered by article 2 (a) of the 1997 Convention and that was to be the subject of the sub-topic.

[9] *Official Records of the General Assembly, Fifty-sixth Session, Supplement No. 10* (A/56/10), para. 97.

Upon reflection and after consultation with hydrogeologists, he now proposes to employ the term "transboundary aquifer system" in the draft articles.

12. The term "groundwaters", which has been consistently used in the Commission, should not mean all the underground waters, but a body of underground waters constituting a unitary whole which could be extracted. Although it is perfectly adequate to use the term in normal writing, it lacks precision as a legal term. It would be more appropriate to opt for the technical term "aquifer", which leaves no ambiguity. The definition of "aquifer" and the need to have reference to "aquifer system" will be studied in the next draft article on "Use of terms".

13. The term "confined" has been used in the Commission to mean "unrelated" or "not connected" to surface waters. For hydrogeologists, however, "confined" means a hydraulic state where waters are stored under pressure and does not refer to the lack of connection to a body of surface waters. Therefore, it would be advisable not to use the term "confined".

14. Furthermore, the assumption under which we started to cover only those groundwaters not covered by article 2 (a) of the 1997 Convention might need reconsideration. Let us take the case of the Nubian Sandstone Aquifer System.[10] It is a huge aquifer system being shared by Chad, Egypt, the Libyan Arab Jamahiriya and the Sudan. The present recharge of the aquifer is very low. It happens to be connected with the Nile south of Khartoum, although that connection is negligible. The small portion of the aquifer system around the connecting point may have similar characteristics to those of the river Nile and could be governed by the 1997 Convention. However, the greatest part of the aquifer system has the distinct characteristics of groundwaters and should be governed by the new groundwater convention. Accordingly, the Special Rapporteur decided to discard the concept of "confined", "unrelated" or "not connected". This may result in the dual applicability of the 1997 Convention and the new convention to certain groundwaters. Should a problem arise as a result of this dual applicability, an article could subsequently be drafted to set out a rule for addressing such situations.

15. The activities regulated by article 1 of the 1997 Convention are (a) uses of the resources and (b) measures of protection, preservation and management related to the uses of those resources. In addition to these two categories of activities, in the case of groundwaters it would also be necessary to regulate activities other than uses of the resources. Such activities would include those related to industry, agriculture and forestation carried out on the ground that adversely affect groundwaters.[11] The phrase "which have or are likely to have" could be replaced by "which involve a risk of causing". The Special Rapporteur adopted the term "impact" over "adverse effect" or "harm" as he felt that the term "impact" is more appropriate in an environmental treaty.

[10] See A/CN.4/533/Add.1, annex II, B.

[11] See A/CN.4/533, para. 20, and A/CN.4/533/Add.1, chap. V, respectively.

IV. Use of terms (definition)

16. The proposed draft article reads as follows:

Article 2
Use of terms

For the purposes of the present Convention:

(a) "Aquifer" means a permeable water-bearing rock formation capable of yielding exploitable quantities of water;[12]

(b) "Aquifer system" means an aquifer or a series of aquifers, each associated with specific rock formations, that are hydraulically connected;

(c) "Transboundary aquifer system" means an aquifer system, parts of which are situated in different States;

(d) "Aquifer system State" means a State Party to the present Convention in whose territory any part of a transboundary aquifer system is situated.

17. An aquifer is a geological formation capable of yielding useful groundwater supplies to wells and springs. All aquifers have two fundamental characteristics: a capacity for groundwater storage and a capacity for groundwater flow. Nonetheless, different geological formations vary widely in the degree to which they exhibit these properties and their area can vary widely with geological structure from a few square kilometres to many thousand square kilometres.[13] Article 1 of the 1997 Convention refers to uses of both "international watercourses" and "their waters". There is no need to follow the example of the 1997 Convention, as the term "aquifer" covers both the rock formation and the waters contained in it. Recharge and discharge zones are outside aquifers.

18. Aquifers exist independently from and can also be linked with other aquifers. There are many cases where two or more adjacent aquifers have hydraulic consistency between them. In such cases, these aquifers must be treated as a single system for proper management. For example, if aquifer A is located entirely within a State, then it is a domestic aquifer and would not be subject to international regulations. However, if aquifer A has a hydraulic link with underlying aquifers B and C, one of which is transboundary, then aquifer A must be treated as part of a transboundary aquifer system consisting of aquifers A, B and C.

19. Some groundwater experts hold the view that all categories of aquifers, regardless of whether they are domestic or transboundary, must be subject to international regulations. The Special Rapporteur feels that this view of emphasizing environmental protection would not be readily accepted by Governments. We would therefore be regulating only transboundary aquifer systems for some time to come.

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[12] *International Glossary of Hydrology, UNESCO-WMO*, 2nd ed. (Fontainebleau, Ecole Nationale Superieure des Mines de Paris, 1992).

[13] Groundwater Management Advisory Team (GW-MATE) Core Group. Characterization of Groundwater Systems: Key Concepts and Frequent Misconceptions. Briefing Note 2. Sustainable Groundwater Management: Concepts and Tools. World Bank, 2003.

20. The definition of terms needs to be revisited after the context of the uses of these terms in the substantive provisions has been determined. The definition of additional terms may also be required.

V. Principles governing uses of aquifer systems

21. The Special Rapporteur is not yet ready to submit a draft article on principles governing uses of aquifer systems because it is first necessary to conduct further research. The problems here are manifold. The basic principles embodied in article 5 of the 1997 Convention are "equitable use", "reasonable utilization" and "participation by States in an equitable and reasonable manner". These principles may not be automatically transposed to the case of groundwaters.

22. The principle of equitable use by the watercourse States is relevant to the shared resources. The waters of international watercourses flow from the zone under the jurisdiction of an upstream State to that under the jurisdiction of a downstream State. They are like fish stocks migrating from the zone of exclusive jurisdiction of one State to that of another. They are shared resources in the true sense of the term. In the case of a transboundary aquifer system, the waters in the system also flow naturally across borders. However, such flow is slow compared with the flow of surface waters. On the other hand, extraction of waters in a transboundary aquifer system by State A would certainly have the effect of lowering the water level of that aquifer system in State B. In this sense, the waters are shared by two States. In any event, the concept of equitable use may call for some modification vis-à-vis groundwaters.

23. The principle of "reasonable utilization" or "optimum use" is viable for renewable resources such as a river system and marine living resources. Scientific criteria for the optimum use of renewable resources require that the level of such resources be kept at the maximum sustainable yield. However, groundwaters may be either renewable or non-renewable. Non-renewable groundwaters can be compared to mineral resources. There would of course be political, social, economic and ecological constraints to the exploitation of such groundwaters. Several scientific criteria and tools point to and recommend the most appropriate exploitation regimes. The principle of "participation by States in an equitable and reasonable manner" also requires detailed study. It is obvious that States should have the right to participate in the management of transboundary aquifer systems. However, what other kinds of rights of participation are to be accorded to States? Does there exist any principle governing the use of groundwaters ready for codification?

VI. Obligation not to cause harm

24. The proposed draft article reads as follows:

Article 4
Obligation not to cause harm

1. Aquifer system States shall, in utilizing a transboundary aquifer system in their territories, take all appropriate measures to prevent the causing of significant harm to other aquifer system States.

2. Aquifer system States shall, in undertaking other activities in their territories which have or are likely to have an impact on a transboundary aquifer system, take all appropriate measures to prevent the causing of significant harm through that system to other aquifer system States.

3. Aquifer system States shall not impair the natural functioning of transboundary aquifer systems.

4. Where significant harm nevertheless is caused to another aquifer system State, the State whose activity causes such harm shall, in the absence of agreement to such activity, take all appropriate measures in consultation with the affected State to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

25. *Sic utere tuo ut alienum non laedas* is the established principle of international liability. The draft is designed to implement this principle for activities related to groundwaters. Paragraph 1 refers to the use of a transboundary aquifer system and paragraph 2 refers to activities other than use which have a risk of causing harm. In the debates in the Commission and in the Sixth Committee, the view has been expressed that a lower threshold than "significant" harm is required for groundwaters, which are more fragile and, once polluted, take longer to purify than surface waters. Human activities at the ground surface, e.g. landfill of waste, can result in aquifer pollution. The polluted groundwater from one side of an international boundary can travel to the other. Once polluted, aquifer cleanup is slow and expensive. The detection of its sub-surface distribution can also be costly. One of the differences between surface water and groundwater resources is that, in the case of the latter, sometimes more time is needed to detect pollution. In the aquifer systems an impact generated by the present generation may be detected by future generations.[14] The Special Rapporteur, however, did not feel it necessary to find an alternative term for "significant". The threshold of "significant" harm is a flexible and relative concept. Even when groundwaters are contaminated by only small amounts of pollutants, the harm they may suffer could be evaluated as significant if the contamination has an irreversible or lasting effect.

26. The time element is also important. It might take years, decades or even more before the physical harm caused by a certain activity related to groundwaters manifests itself. This point was made by one delegation, which stated that the Commission should take a practical approach by focusing on solving current issues or those which will arise in the near future.[15]

27. Paragraph 3 deals with the situation where a transboundary aquifer system is permanently destroyed. Hydrogeologists tend to place importance on the obligation contained in the provision. What would be the justification for this principle? Is it that such destruction causes significant harm to another aquifer system State? If the retention of the principle is warranted, it might be preferable to place the paragraph in part IV, which deals with preservation.

28. Paragraph 4 still focuses on the aspect of prevention, as do the other paragraphs of the draft article. It does not deal with the question of international liability, though reference is made to the discussion of the question of compensation.

[14] Internationally Shared Aquifer Resources Management, a framework document IHP-VI. Non Serial Documents in Hydrology (Paris, UNESCO, November 2001), p. 17.

[15] Statement of the delegation of China, in A/C.6/58/SR.20, para. 48.

The Special Rapporteur intends to propose at a later stage draft articles on procedures that would lead to and expedite the solution of international liability involving aquifer systems. However, he feels that the substantive question of international liability should be left to the exercise which the Commission is undertaking under the topic of "International liability for injurious consequences arising out of acts not prohibited by international law".

VII. General obligation to cooperate

29. The proposed draft article reads as follows:

Article 5
General obligation to cooperate

1. Aquifer system States shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain appropriate utilization and adequate protection of a transboundary aquifer system.

2. In determining the manner of such cooperation, aquifer system States are encouraged to establish joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions.

30. This draft article sets out the principle of a general obligation to cooperate among aquifer system States and the procedures for such cooperation. The draft is self-explanatory. Article 8 of the 1997 Convention referred to "optimum utilization" in its paragraph 1. For the reasons noted in paragraph 23 above, "optimum" is replaced by "appropriate" in this draft.

VIII. Regular exchange of data and information

31. The proposed draft article reads as follows:

Article 6
Regular exchange of data and information

1. Pursuant to article 5, aquifer system States shall, on a regular basis, exchange readily available data and information on the condition of the transboundary aquifer system, in particular that of a geological, hydrogeological, hydrological, meteorological and ecological nature and related to the hydrochemistry of the aquifer system, as well as related forecasts.

2. In the light of uncertainty about the nature and extent of some transboundary aquifer systems, aquifer system States shall employ their best efforts to collect and generate, in accordance with currently available practice and standards, individually or jointly and, where appropriate, together with or through international organizations, new data and information to more completely define the aquifer systems.

3. If an aquifer system State is requested by another aquifer system State to provide data and information that is not readily available, it shall employ its best efforts to comply with the request, but may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information.

4. Aquifer system States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner which facilitates its utilization by the other aquifer system States to which it is communicated.

32. Regular exchange of data and information is the first step in cooperation between transboundary aquifer system States. Article 9 of the 1997 Convention is adjusted to meet the special characteristics of groundwaters. In particular, paragraph 2 is newly drafted in view of the insufficient status of scientific findings of some aquifer systems. Data and information in this draft article are limited to those concerning the condition of aquifer systems. Data and information related to uses and other activities of transboundary aquifer systems and their impact would be dealt with later in part III, "Activities affecting other States".

IX. Different kinds of uses

33. The proposed draft article reads as follows:

Article 7
Relationship between different kinds of uses

1. In the absence of agreement or custom to the contrary, no use of a transboundary aquifer system enjoys inherent priority over other uses.

2. In the event of a conflict between uses of a transboundary aquifer system, it shall be resolved with special regard being given to the requirements of vital human needs.

34. Like uses of international watercourses and of their waters, uses of transboundary aquifer systems are numerous, especially in arid and semi-arid countries, where they often constitute the only source of water. Even in wetter regions, groundwaters are often the only source of drinking water since they are of better quality. Groundwaters are a source of freshwater in agriculture (irrigation), industrial development, human domestic needs and support terrestrial and aquatic ecosystems. The need for this draft article would also depend on the final formulation of the principles governing uses of aquifer systems and the factors to be taken into account in implementing such principles.

Annex I

Draft convention on the law of transboundary aquifer systems

Part I
Introduction

Article 1
Scope of the present Convention

The present Convention applies to uses of transboundary aquifer systems and other activities which have or are likely to have an impact on those systems and to measures of protection, preservation and management of those systems.

Article 2
Use of terms

For the purposes of the present Convention:

(a) "Aquifer" means a permeable water-bearing rock formation capable of yielding exploitable quantities of water;[a]

(b) "Aquifer system" means an aquifer or a series of aquifers, each associated with specific rock formations, that are hydraulically connected;

(c) "Transboundary aquifer system" means an aquifer system, parts of which are situated in different States;

(d) "Aquifer system State" means a State Party to the present Convention in whose territory any part of a transboundary aquifer system is situated.

Part II
General principles

Article 3
Principles governing uses of aquifer systems

[Draft to be proposed later]

Article 4
Obligation not to cause harm

1. Aquifer system States shall, in utilizing a transboundary aquifer system in their territories, take all appropriate measures to prevent the causing of significant harm to other aquifer system States.

2. Aquifer system States shall, in undertaking other activities in their territories which have or are likely to have an impact on a transboundary aquifer system, take all appropriate measures to prevent the causing of significant harm through that system to other aquifer system States.

[a] *International Glossary of Hydrology, UNESCO-WMO*, 2nd ed. (Fontainebleau, Ecole Nationale Superieure des Mines de Paris, 1992).

3. Aquifer system States shall not impair the natural functioning of transboundary aquifer systems.

4. Where significant harm nevertheless is caused to another aquifer system State, the State whose activity causes such harm shall, in the absence of agreement to such activity, take all appropriate measures in consultation with the affected State to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

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2. In determining the manner of such cooperation, aquifer system States are encouraged to establish joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of experience gained through cooperation in existing joint mechanisms and commissions in various regions.

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2. In the light of uncertainty about the nature and extent of some transboundary aquifer systems, aquifer system States shall employ their best efforts to collect and generate, in accordance with currently available practice and standards, individually or jointly and, where appropriate, together with or through international organizations, new data and information to more completely define the aquifer systems.

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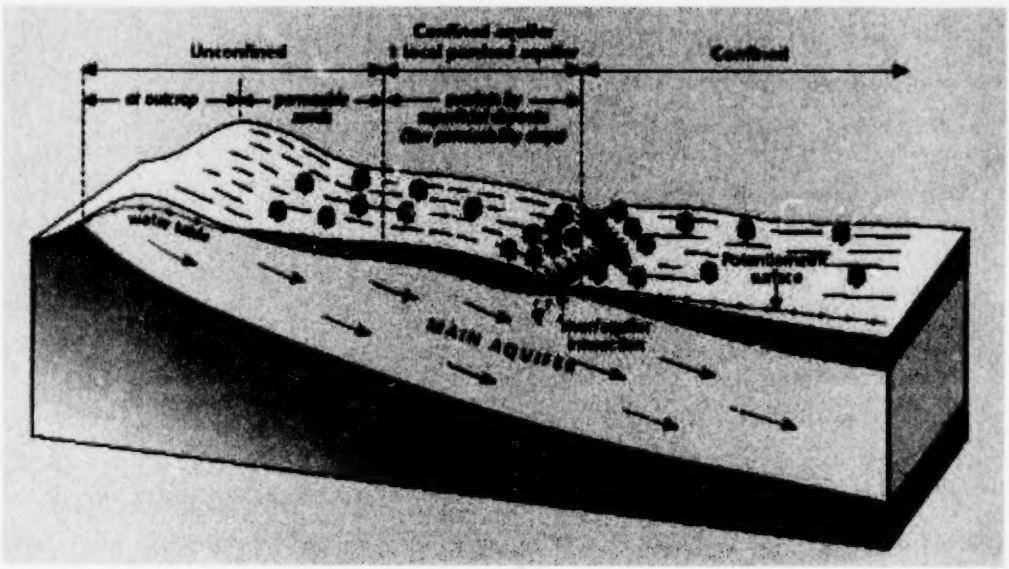
Annex II

Schematic representation of an aquifer system



Source: Brian Morris, Adrian Lawrence, John Chilton, Brian Adams, Roger Calow and Ben Klinck. (2003) Groundwater and its Susceptibility to Degradation: A Global Assessment of the Problem and Options for Management. Early Warning and Assessment Report Series, RS. 03-3. United Nations Environment Programme, Division of Early Warning and Assessment, Nairobi.